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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,661	01/24/2006	Milan Momcilo Popovich	DLP093 US	9628

7590 04/09/2007

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EXAMINER	
BEDTELYON, JOHN M	
ART UNIT	**PAPER NUMBER**
2874	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,661	POPOVICH ET AL.	
	Examiner	Art Unit	
	John M. Bedtelyon	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 November 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/24/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "plurality of independently switchable transparent electrodes elements" and "information encoded in a multiplicity of separately switchable grating regions" and "multiplicity of light sources of appropriate spectral output" and "a third transparent plate and a second ESBG sandwiched between said second and third transparent plates" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, it's unclear how each ESBG device contains information encoded in a multiplicity of separately switchable grating regions. The terminology "wherein each said ESBG device" is unclear as only one ESBG device has been claimed, and it's unclear how a single ESBG could have separately switchable regions. It is interpreted that a single ESBG is disposed between the first and second transparent plates and the ESBG contains information encoded on a switchable grating region. Along the same lines, and with respect to the limitation "a plurality of independently switchable transparent electrodes elements", paragraph [0030] of applicants specification states "Each symbol may be independently controlled by an independent pair of planar electrodes." As there are only two transparent plates and a

single ESBG between the two, it is interpreted that the plurality of independently switchable transparent electrode elements includes a single *pair* of switchable transparent electrodes. They are not independent of each other, but would be independent of other pairs, if there were more that a single pair of transparent plates with similarly claimed electrodes.

With respect to claim 10, the same issues arise as discussed above in claim 1 and are interpreted in a similar manner.

4. Claims 3 and 4 and 5 recite the limitation "said illumination means" in the first line of each claim. There is insufficient antecedent basis for this limitation in the claims.

It is interpreted that each claim, 3, 4 and 5 adds an illumination means as described in each of the claims.

Claim Objections

5. Claim 6 is objected to because of the following informalities: Claim 6 in it's current form depends from claim 8, but it is interpreted that this claim should depend from claim 5. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Sutherland et al. (US Patent 5,942,157, hereinafter '157).

With respect to claim 1, '157 teaches: A symbol generator for presenting information in an optical viewfinder comprising: a first ESBG device (10) having a front side (right side, see figure 1) facing towards the viewer (the area to the right of the device (10)) and a rear side (left side, see figure 1); wherein said ESBG is sandwiched between first and second transparent plates (14); wherein said transparent plates together function as a light guide (light can pass from one side, through to the other, therefore they function as light guides); wherein each said ESBG device contains information encoded in a multiplicity of separately switchable grating regions (18, the diffraction pattern created is the encoded information); a plurality of independently switchable transparent electrodes elements (column 10, lines 4-5 teach the plates (14) are coated in ITO, creating transparent electrodes), said independently electrodes substantially overlaying said separately switchable grating regions (see figure 1); and means for coupling illumination into said transparent plates (column 2, lines 49-51, the plates being transparent is the means that light can be coupled into them).

The limitation "said ESBG being operative to project the images of said information towards said viewer when said ESBG rear side is illuminated using light of a first wavelength and no electric field is applied to said ESBG" is more along the lines of a method limitation, therefor the device in the prior art only has to be capable of performing the function. The ESBG device of '157 would project it's image towards the viewer if a light was illuminated on the rear side, and if no electric field is applied to said

ESBG. As shown in figure 4, the maximum diffraction of the grating is with zero applied voltage, as the voltage increases, the diffraction of the grating decreases until it reaches essentially zero percent.

With respect to claim 2, '157 teaches: The symbol generator of claim 1, wherein said ESBG device (10) provides a grating (18) within each of said separately switchable regions and is clear elsewhere. The gratings (18) diffract light, and the plates (14) are transparent.

With respect to claim 7, '157 teaches: The symbol generator of claim 1, wherein said separately switchable grating (18) regions provide images of symbols (the diffraction pattern of the grating is a symbol).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3, 4, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. (US Patent 5,942,157, hereinafter '157) in view of Hiyama et al. (US Patent Application Publication 2002/0033909, hereinafter '909).

With respect to claims 3 and 4, '157 teaches the ESBG utilizing PDLC of claim 1 as previously stated.

'157 describes the ESBG device but is silent to using linearly polarized light or LEDs with it.

'909 teaches a light illumination system for use with a PDLC device using LEDs (paragraph [0064]) and that is capable of also generating linearly polarized light (135, see figure 8) using the PDLC as described in '157.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include with the '157 PDLC ESBG, the illumination system as described in '909 because the lighting system of '909 provides light to PDLC devices with high light utility efficiency and low electric power consumption (paragraph [0011], last sentence).

With respect to claim 8, '157 teaches the ESBG utilizing PDLC of claim 1 as previously stated.

'157 does not teach a diffuser.

'909 teaches a light illumination system for use with a PDLC device comprising a diffuser (25) because diffusers can correct directivity of the emitted light (paragraph [0066], first sentence, also, figure 1B).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the '157 ESBG, the illumination system of '909 comprising a diffuser because diffusers are know to correct directivity of emitted light.

With respect to claim 10, '157 further teaches:

The symbol generator of claim 3, further comprising a third transparent plate and a second ESBG sandwiched between said second and third transparent plates (see figure 13); wherein said first, second and third transparent plates together function as a light guide (light passing through the optical axis (206) would go through all the transparent plates (200a) and are therefor function as a light guide); wherein each said second ESBG device contains information encoded in a multiplicity of separately switchable grating regions (200b, the PDLC regions contain the information as described above in the rejection for claim 1); wherein said switchable grating regions of said first and second ESBGs substantially overlap (see figure 13);

As described in the rejection for claim 1, the apparatus simply has to be capable of the limitation "said second ESBG being operative to project the images of said information towards said viewer when said ESBG rear side is illuminated using light of a second wavelength and no electric field is applied to said second ESBG" and the stacked PDLC and plates of figure 13 are capable as described in the claim 1 rejection.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. (US Patent 5,942,157, hereinafter '157).

With respect to claims 5 and 6, '157 states "The peak diffraction efficiency can approach 100%, depending on the wavelength and polarization of the probe beam" (column 10, lines 35-37) but is silent as to the probe beam having limited bandwidth centered about a wavelength and doesn't state that specific wavelength would be 620nm. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to use light from a probe beam centered around a specific wavelength if that specific wavelength has a maximum diffraction efficiency, and that the specific wavelength is 620nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. (US Patent 5,942,157, hereinafter '157) in view of Asakawa et al. (US Patent 5,892,598, hereinafter '598).

With respect to claim 9, '157 teaches the claim limitations of claim 1 as previously stated.

'157 is silent to The symbol generator of claim 1, wherein said separately switchable grating regions are configured to diffract light at different wavelength provided by a multiplicity of light sources of appropriate spectral output.

'598 teaches using volume phase holograms, the type of device taught in the '157 patent, to create separately colored areas of a grating region to color an image in a head up display, which would be useful because colored images in a HUD would be easier to see and have a sharper contrast to the surround environment (column 4, lines 30-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the '157 reference and the '598 method of coloring the image created from using a PDLC volume phase hologram because a colored image in a HUD would be easier to spot over the light coming from the environment.

The '157 and '598 combination discloses the claimed invention except for a single light source capable of emitting multiple wavelengths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a multiplicity of light sources emitting the same wavelengths since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St Regis Paper Co. v. Bemis Co., 193 USPQ 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Bedtelyon whose telephone number is 571-270-1290. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Bedtelyon

KEVIN WOOD
PRIMARY PATENT EXAMINER